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ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
PEST SURVEY AND TECHNICAL SUPPORT STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG activity generally light on small grains in south-central area. (p. 867).

PEAR PSYLLA overwintering generation in pear orchards of Hood River Valley in Oregon one of largest in recent years. (p. 869).

SOUTHERN PINE BEETLE population in Virginia expected to be heavy in 1975. (p. 870).

Detection

● AN APHID reported from "moss" in Utah is a new United States record. This European species reported from grasses on that continent. (pp. 872-873).

● A LEAFHOPPER reported as new to Hawaii is a new United States record, but is not known to occur in continental U.S. This leafhopper has been recorded in Africa, Polynesia, Central America, the Philippines, and western Caroline Islands. (p. 875).

● A THRIPS collected in Florida is a new United States record. It is one of the major thrips pests in India and has been reported to cause some damage to cotton in Sudan. (p. 873).

New State records include APHIDS in Virginia (p. 869), Idaho (p. 872), and North Carolina (p. 872), a BARK BEETLE in Colorado (p. 871), a CLICK BEETLE in Hawaii (p. 875), a LADY BEETLE in Alabama (p. 873), MEALYBUGS in Oregon (p. 870) and Indiana (p. 871), RED WAX SCALE in Pennsylvania (p. 870), a TACHINA FLY in Michigan (p. 874), and a WEEVIL in North Dakota (p. 869).

For new county records see page 876.

Special Reports

The U.S. Military Retrograde Cargo Inspection Program in the Republic of Viet-Nam: 1969-1973. (pp. 877-880).

Estimated Losses and Production Costs Attributed to Insects and Related Arthropods - 1973. (pp. 881-903).

Reports in this issue are for weeks ending November 22 through December 13 unless otherwise indicated.

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WEATHER OF THE WEEK ENDING DECEMBER 16

Reprinted from Weekly Weather and Crop Bulletin supplied by National Weather Service, NOAA.

HIGHLIGHTS: A series of weather systems moving through southern Canada spread warm Pacific air over the northern tier of States and the central Great Plains during the week. The greates departure occurred in the North Central States where average weekly temperatures were 12 to 13 degrees above normal. A Low pressure center formed in the northwest Gulf of Mexico late Tuesday, triggering widespread rains across the Southern and Southeastern States before drifting off the central United Satates coast Friday.

PRECIPIATION: The series of weather systems moving through southern Canada produced heavy rains along the Pacific Northwest coast. Rains measuring 3 to 4 inches fell along the Washington Coast, with lesser amounts reported along the Oregon and California coasts. Elsewhere, heavy precipitation associated with the Low over the gulf of Mexico soaked the South and Southeast with rains averaging over 1 inch. This spread rain as far north as southeastern Kansas. Monday, another in a series of northern Pacific weather fronts triggered rain on the Washington Coast. A slow-moving storm system triggered rain, drizzle, and snow across Texas, New Mexico, and Oklahoma on Tuesday. Wednesday, a complex storm system from the gulf coast moved northeastward into Texas and northern Louisiana. Snow fell over Oklahoma and Kansas with rain and thundershowers reported over the middle and lower Mississippi Valley. Early morning snowfall amounts included: 4 inches at Hobart, Oklahoma; 2 inches at Oklahoma City, Oklahoma; and 1 inch at Wichita, Kansas. A wintery storm system stretching across the northern U.S. produced rain over parts of the lower Northeast and snow over New England, the northern Plains, and upper Great Lakes on Thursday. Minot, North Dakota, reported 3 inches with 2-inches accumulations reported at Bemedji, Minnesota and Rumford, Maine. Weather of the week continued on page 904.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Ranged 75-125 per drill row foot in Motley County small grains week ending December 6. (Green). NEW MEXICO - Ranged 25-30 per linear foot in one wheatfield near Portales, Roosevelt County, week ending December 13. (N.M. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Counts ranged 0-3 per linear foot of wheat near Clovis, Curry County, week ending November 29, and near Portales, Roosevelt County, week ending December 13. (N.M. Coop. Rpt.). TEXAS - Activity generally light on small grains in Rolling Plains area week ending November 22. Moderate in some fields in Knox, Jones, and Motley Counties; treatments made in parts of these counties. (Boring). Light in wheat in Archer, Baylor, Childress, Motley, Shackelford, Throckmorton, Wichita, Wilbarger, and Young Counties week ending December 6. Ranged 50-100 per drill row foot in Motley County ryefields; some treatment made in Motley and Knox Counties. (Green).

OKLAHOMA - S. graminum ranged 75-100 per linear foot in scattered wheatfields checked in Harper County week ending November 22. Damage due mostly to leaf rust. Scattered heavy infestations noted in Comanche County. Ranged 1-43 per linear foot in 19 fields checked in Payne, Noble, Kay, Garfield, Logan, Kingfisher, and Blaine Counties. Only 6 of these fields averaged above 10 per linear foot. Light in Texas County. Counts per linear foot week ending November 29 as follows by counties: Caddo, Washita, and Canadian 20-30; Payne 6-15; Kiowa and Jackson 0-9. Ranged up to 28 per linear foot in wheat checked in Washita and Caddo Counties week ending December 6. Light in Garfield County. Ranged up to 30 per linear foot in Caddo and Washita Counties, 20-25 per linear foot in Custer County, and 2-6 per linear foot in Payne County week ending December 13. (Okla. Coop. Sur.).

ARKANSAS - None observed during limited greenbug survey of wheat in Washington County week ending November 22. Still light in scattered east-central and northeast area wheat. (Boyer). KANSAS - Ranged none to light in wheat 3-6 inches tall in Hodgeman, Ford, Edwards, Kiowa, and Pawnee Counties week ending November 22. Heaviest counts 3 per drill row foot in Kiowa County. (Bell). No damaging infestations noted in wheat surveyed; about 9 per drill row foot found in Wabaunsee, Shawnee, and Mitchell Counties week ending December 6. (Bell).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - NEW MEXICO - Larvae ranged 2-4 per cornstalk near Clayton, Union County, and 3 per 4 stalks taken near Carlsbad, Eddy County, week ending November 22. These populations heavier than previous years. Infested 75 percent of cornstalks in Roosevelt and Chaves Counties week ending November 29. (N.M. Coop. Rpt.).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Infestations noted in Haskell and Throckmorton Counties week ending November 22; heavy in one oatfield. (Boring). Light to moderate in several small grain fields in Knox, Haskell, and Throckmorton Counties week ending December 6. (Green). OKLAHOMA - Very light in wheat in Kiowa and Jackson Counties during week ending November 29. Ranged 25-30 per linear foot in wheat week ending December 6 in Caddo and Washita Counties; averaged 40 per linear foot following week. (Okla. Coop. Sur.).

AN APHID (Rhopalosiphum padi) - KANSAS - Occasionally light in wheat in Ford and Edwards Counties week ending November 22. Heaviest count 20 per drill row foot in Ford County. None found in wheat in Pawnee, Kiowa, and Hodgeman Counties. Commonly light in wheat; occasionally moderate. Heaviest count noted at 37 per drill row foot in 7-inch Lincoln County wheat and 15 in 8-inch wheat in Saline County week ending December 6. (Bell). OKLAHOMA - Light in most wheat in Payne, Noble, Kay, Garfield, Logan, Kingfisher, Blaine, Muskogee, and Wagoner Counties week ending November 22. Averaged 40 per linear foot in wheat in Washita, Caddo, and Canadian Counties week ending November 29; ranged 1-18 in Payne County. Ranged up to 30 per linear foot in wheat in Caddo and Washita Counties week ending December 6. Ranged 4-9 per linear foot in Payne County wheat week ending December 13. (Okla. Coop. Sur.). MISSISSIPPI - Populations began to become established on rye and wheat winter grazing in Oktibbeha and Noxubee Counties week ending November 29. (Robinson).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - ILLINOIS - Adults ranged 55-141 (average 106) per 100 sweeps in 4 Jersey County alfalfa fields week ending November 22. (Ill. Ins. Rpt.). MISSOURI - Adults ranged 0-14 per 10 sweeps in southwest area alfalfa week ending November 29. (Munson). KANSAS - Oviposition continuing at substantial rate in Riley and Pottawatomie Counties week ending November 22. Field of 13-inch alfalfa in Riley County averaged 375 eggs per square foot in samples taken November 4, yielded 625 eggs in samples taken November 20. Field of 12-inch alfalfa in Pottawatomie County had 25 eggs per square foot October 30 and 280 November 18. Eggs averaged 23 per square foot in 12-inch alfalfa in Pawnee County, 17 in 12-inch alfalfa in Ford County, and none in 8-inch alfalfa in Finney County sampled November 19. Eggs averaged 280 per square foot in 12-inch Saline County alfalfa and trace in 10-inch Republic County alfalfa week ending December 6. (Bell).

ARKANSAS - Survey negative for alfalfa weevil in northwest area alfalfa weeks ending November 22 and 29, and December 13. (Boyer). OKLAHOMA - Eggs averaged 29 per square foot in one alfalfa field in Payne County November 7, and 76 and 120 per square foot in 2 fields in Stephens County November 14. (Okla. Coop. Sur.).

MISCELLANEOUS FIELD CROPS

A WEEVIL (Apion occidentale) - NORTH DAKOTA - Adults collected from sunflower in Ransom County July 29, 1974, by P. Casals. Determined by R.E. Warner. This is a new State record. (Schulz).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (Psylla pyricola) - OREGON - Overwintering generation in Hood River Valley, Hood River County, one of largest in recent years. Up to 37 per tray observed in pear orchards November 26. (Zwick, Fields).

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Damage to pecans in untreated orchards more evident in Covington County as nut harvest continued week ending December 6. Infestation heavy in most orchards and trees. (Linder).

PECAN WEEVIL (Curculio caryae) - ALABAMA - Damage to pecans in untreated orchards more evident in Covington County as nut harvest continued week ending December 6. Infestation heavy in most orchards and trees. (Linder). TEXAS - Heavy damage noted week ending December 6 in following counties (percentage in parentheses): Comanche (35-40), Hamilton (30-71), Erath (15-40). (Green).

CITRUS

CALIFORNIA RED SCALE (Aonidella aurantii) - CALIFORNIA - Heavy in some navel orange groves at Oroville, Butte County, week ending December 13. Infestation following same pattern as in other areas of State regarding "expoloding" populations. This scale insect particularly damaging in 1974. (Cal. Coop. Rpt.).

WOOLLY WHITEFLY (Aleurothrixus floccosus) - CALIFORNIA - Observed on grapefruit tree near old insectary building at Rivera, Los Angeles County, December 6, 1974, by G. Mork, G. Maxwell, and W. Edwards. Determined by R. Gill. This is a new county record. Delimitation in county now confirms 173 properties in 15-square-mile area. Some infestations very heavy. Delimiting not yet completed. This infestation 100+ miles from San Diego County where A. floccosus previously known to occur. Infestations reaching peak in several San Diego County areas week ending December 13. Detected on navel orange trees in 15-gallon tubs in nursery at Anaheim, Orange' County. (Cal. Coop. Rpt.).

ORNAMENTALS

SPIREA APHID (Aphis spiraecola) - NEW JERSEY - Collected on Pyracantha sp. on Sutton Road in Lebanon, Hunterdon County, July 29, 1973, by D.D. Leonard. Determined by M.D. Leonard. This is a new county record. (Leonard).

AN APHID (Cinara junipivora) - VIRGINIA - About 15 apterae and nymphs collected on Juniperus sp. at Vienna, Fairfax County, June 1, 1973, by L.G. Davis. Determined by M.D. Leonard. This is a new State record. (Leonard).

RED WAX SCALE (Ceroplastes rubens) - PENNSYLVANIA - Collected on Dieffenbachia sp. in greenhouse at York, York County, October 3, 1974, by W. Blosser and K. Valley. About 6 scales per leaf found on one plant. Determined by J.F. Stimmel. This is a new State record. (Henry).

A MEALYBUG (Rhizoecus pritchardi) - OREGON - Found infesting several African violet plants (Saintpaulia sp.) in greenhouse at Central Point, Jackson County. Specimens collected October 21, 1974, by J.W. McLoughlin. Determined by R.J. Gill. This is a new State record. This mealybug is considered to be a serious pest of Saintpaulia, but grower has never detected any apparent damage. The species has been recorded also from California, Florida, Maryland, New York, and Pennsylvania. (Westcott, McLoughlin).

A MEMBRACID (Antianthe expansa) - CALIFORNIA - Nymphs occurred on jasmine plants at 10 per stem at Chula Vista, San Diego County, week ending November 22. Pest increasing in importance as it is extending its hots range. This is native to South America and has been problem in State for past 2-3 years. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - VIRGINIA - Recent field examinations in Lunenburg, Halifax, Surry, Sussex, Nansemond, and Isle of Wight Counties showed universally healthy beetle brood in all spots checked. Some woodpecker activity evident in most spots, but due to extensive nature of current outbreak, impact of these predators on reducing overwintering beetle brood will be lessened. Clerid beetle larvae noted in exceptionally heavy populations in Coastal Plain counties. D. frontalis population expected to be heavy in 1975. During October 1974, gross acreage of 897,000 acres surveyed from air to detect new spot infestations; 490 spots ground visited; salvage during October estimated at 1.5 million board feet and 8,190 standard cords. Extension of D. frontalis outbreak on Glenwood and Pedlar Districts of Newcastle District (Craig County) on U.S. National Forest reported in September. Virginia Division of Forestry personnel cooperated in locating and obtaining private landowner permission for U.S. Forest Service to fell and treat infested trees in several small spots near National Forest boundary. (Va. Div. For., For. Pest Sur. Rpt., Oct.). TENNESSEE - Collected from a 17-year-old unthinned loblolly pine stand in Giles County November 25, 1974, by T. Shires and E. Watson. Determined by B. Kauffman. This is a new county record. Infestation involves 3 spots with 5-10 trees per spot, treatments to be applied. (Gordon, Bruer).

BARK BEETLES (*Ips* spp.) - ALABAMA - All stages of *I. grandicollis* heavily infested pine in 200-acre clear-cut and bulldozed areas in Lee County week ending December 13. Emerging adults not expected to migrate due to plentiful supply of damaged trees. Also, feeding and breeding expected to decrease due to winter temperatures. (McQueen). COLORADO - Adult specimens of *I. sulcifrons* collected from Engelmann spruce (*Picea engelmanii*) at San Isabel, Custer County, September 28, 1967, by J.F. Chansler. Determined by D.M. Anderson. This is a new State record. Previously recorded from New Mexico and Utah. (PPQ).

DOUGLAS FIR TUSSOCK MOTH (*Orygia pseudotsugata*) - NEW MEXICO - Detailed survey in Sante Fe, Sante Fe County, week ending November 22 showed 110 trees involved. General movement of infestation appears to be eastward. Outbreak in Los Alamos, Los Alamos County, involves 70 trees at present time. Defoliation in both cases ranged 5-95 percent. Population levels appear to be on increase but rather slow at present. (N.M. Coop. Rpt.).

FALL CANKERWORM (*Alsophila pometaria*) - WEST VIRGINIA - Tree banding with tanglefoot in Dolly Sods area of Grant County November 21 trapped 37 females on 16 trees. Total of 549 males trapped on same 16 trees. Females ranged 0-10 per tree. On November 30, tree banding in Mount Storm area, Grant County, trapped 103 females on 3 trees; ranged 7-57 per tree. Males totaled 203 on same 3 trees. (Hacker).

A MEALYBUG (*Eurycoccus jessica*) - INDIANA - Collected from hickory at agronomy farm in Tippecanoe County July 30, 1974, by D.L. Caldwell and D.L. Schuder. Confirmed by D.R. Miller. This is a new State record for this pseudococcid. Specimens were scarce; only 4 found after diligent search. (Schuder).

MAN AND ANIMALS

SCREWWORM (*Cochliomyia hominivorax*) - Total of 749 cases reported from continental U.S. during period November 3-30 as follows: Texas 731, New Mexico 1, Arizona 6, California 3, Oklahoma 8. Total of 1,079 cases confirmed from Mexico. Number of sterile flies released in U.S. this period totaled 318,660,500 as follows: Texas 294,180,500; New Mexico 873,000; Arizona 15,417,000; California 8,190,000. Total of 243,323,500 sterile flies released in Mexico. (Anim. Health).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Ranged 0-27 per head in backs of a herd of 7 to 8-month-old calves in Major County November 16. Ranged 0-13 (average 7) per head in Payne County cattle week ending November 29; increased to 30 per head 14 days later. Heavy in herd of Comanche County cattle same period. Light in Hughes County cattle week ending December 6. Moderate in Haskell County cattle week ending December 13. (Okla. Coop. Sur.).

FACE FLY (*Musca autumnalis*) - KENTUCKY - Adults taken in Carroll, Trimble, and Owen Counties September 18, 1974, and September 24, 1974, in Spencer, Anderson, and Jefferson Counties. Collected and determined by D.E. Barnett. Confirmed by F.W. Knapp. These are new county records. (Barnett). MISSISSIPPI - No adults noted on cattle in Monroe and Chickasaw Counties week ending November 22. Many observed on sunny sides of building. Adults emergenced from overwintering sites 14 days later, rested on buildings during warmer parts of day. Some adults, up to 4 per face, noted on one Chickasaw County herd during warmer periods. This is latest time of year species observed on cattle in State. (Robinson).

HORN FLY (*Haematobia irritans*) - FLORIDA - Adults averaged 25 per animal on beef cattle at Gainesville, Alachua County, December 11. (Fla. Coop. Sur.). MISSISSIPPI - Adults light, ranged up to 10 per animal, on cattle in Oktibbeha and Noxubee Counties week ending November 22. Adults active only in warmer hours of day. Inspection negative on Oktibbeha County cattle following week. (Robinson). OKLAHOMA - Light, ranged 10-25 per head, on Payne County cattle week ending November 22. (Okla. Coop. Sur.).

MOSQUITOES - KENTUCKY - Adult specimens of *Psorophora ferox* taken in light trap September 30 by F.W. Knapp in Marshall County. Determined by D.E. Barnett. Confirmed by C. Covell, Jr. One female *Aedes vexans* taken October 8-15, 1974, in Bourbon County malaise trap. Collected and determined by P.H. Freytag. Confirmed by D.E. Barnett. These are new county records. (Barnett).

HOG LOUSE (*Haematopinus suis*) - MISSISSIPPI - Increased on hogs in Oktibbeha County week ending December 13. Averaged 6 per head on sows and boars. (Robinson).

CATTLE TAIL LOUSE (*Haematopinus quadripertusus*) - FLORIDA - Adults averaged 25 and eggs 50 per animal on 24 beef cows and calves at Gainesville, Alachua County, November 21. (Fla. Coop. Sur.).

MISCELLANEOUS WILD PLANTS

AN APHID (*Jacksonia papillata* Theobald) - UTAH - Collected from "moss" in Logan Canyon, Cache County, September 6, 1959, by G.F. Knowlton. Determined by V. Eastop. This is a new United States record, and first report for North America. Additional specimens collected from "moss" in Cache County at Millville September 21, 1973, Blacksmiths Fork Canyon August 16, 1974, and Logan Canyon during May, September, and October 1974 by G.F. Knowlton were determined by C.F. Smith. IDAHO - Collected from "moss" in Cub River Canyon, Franklin County, September 8, 1959, by G.F. Knowlton. Determined by V. Eastop. This is a new State record. Collected from "moss" at Riverdale, Franklin County, August 18, 1974. Collected and determined by C.F. Smith. NORTH CAROLINA - Collected from "moss" on Mount Mitchell in Yancey County and on Roan High Knob in Mitchell County August 25, 1973, by C.K. Smith and C.F. Smith. Determined by C.F. Smith. This is a new State record. Also taken on Roan High Knob October 2, 1973, by same collectors.

V. Eastop has stated "*papillata* lives at base of grasses, particularly *Festuca rubra*. Seems to like cool, damp conditions." F.B. Muller (1973. Aphiden an Moosen, Entomologische Abhandlungen Band 39, Nr. 3, p. 240) states "Perhaps the latter species

(*Jacksonia papillata*) feeds at least occasionally on mosses, for no less than 7 samples from which *J. papillata* had been extracted contained no other plants besides mosses." C.F. Smith states in correspondence "All of the North American specimens I have seen were collected from moss using a modified Berlese funnel. I have never seen it feeding on grasses or moss. It is very difficult to obtain a pure sample of a moss, therefore I am willing to accept the word of the numerous European workers who have collected *papillata* from grasses." (C.F. Smith).

AN APHID (*Aphis rumicis*) - VIRGINIA - Many collected on *Rumex crispus* (curly dock) in Arlington County May 27, 1973, by H.H. Shepard. Determined by M.D. Leonard. This is a new county record. (Leonard).

A THRIPS (*Frankliniella schultzei* (Trybom)) - FLORIDA - Pale form (=*F. sulphurea* Schmutz, *F. dampfi* Priesner, *F. delicatula* Bagnall) collected on *Richardia* sp. at Miami, Dade County, October 17, 1974, by F.D. Mathews and by sweeping November 14, 1974, by F.D. Mathews and B.K. Dozier. There is a lot in the U.S. National Museum collected on miscellaneous composite flowers in 1950 on Big Pine Key, but this record apparently has not been published. Determined by S. Nakahara. These 3 collections are first report of *F. schultzi* in continental United States.

Except for differences in coloration, L.A. Mound (1968. Bul. Brit. Mus. (Nat. Hist.) Ent. sup. 11:39) was not able to find any morphological differences between the pale form and *F. schultzei* (dark form =*F. interocellaris* Karny (synonymy incomplete)). He concluded that they were color differences of a single species, *F. schultzei*.

F. schultzei is a polyphagous species. The dark form is a vector of tomato-spotted wilt virus, but according to K. Sakimura (1969. Pacific Insects 11:761-762) the pale form (*F. sulphurea*) was not a vector of this virus in Hawaii. T.N. Ananthakrishnan (1971. J. Sci. Indus. Res. 30:113-146) states that *F. dampfi* (pale form) is one of major thrips pests in India. J.W. Gentry (1965. U.S. Dept. Agr. Hbk. 273, p. 60) reports some damage to cotton in Sudan by *F. dampfi*. The pale form of *F. schultzei* has been reported from Italy, Egypt, Sudan, Uganda, Kenya, Somalia, Senegal, Israel, Iran, and the Indo-Malay-Papua-Oceana area including Hawaii. Since 1931, there have been more than 74 interceptions of *F. schultzei* at U.S. ports of entry from Australia, Africa, South America, and India. (Nakahara).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - *Hippodamia convergens* (convergent lady beetle) ranged 0.2-0.4 per linear foot in Payne County wheat week ending December 13. (Okla. Coop. Sur.). ALABAMA - *Lindorus lophanthae* adults and larvae heavy on mulberry tree at Hartselle, Morgan County; fed on heavy population of undetermined scale insect. Collected September 23, 1974, by H. Houston. Determined by R.D. Gordon. This is a new State record. *H. convergens* adults and larvae active on heavy aphid population in trees at Auburn, Lee County, in spite of low temperatures of 28-32 degrees F. past several weeks. (McQueen).

A TACHINA FLY (Compsilura concinnata) - MICHIGAN - Taken from pupated Anisota stigma (spiny oakworm) larvae in Isabella County August 1, 1974. Collected by R.J. Priest. Determined by C.W. Sabrosky. This is a new State record. (Hanna).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

JAPANESE BEETLE (Popillia japonica) - MARYLAND - Grubs light to moderate (3-12 per square foot) in Montgomery County turf. Grubs moved down in soil to average depth of 4 inches week ending November 29. (U. Md., Ent. Dept.).

ORIENTAL FRUIT FLY (Dacus dorsalis) - CALIFORNIA - Fly catches light in San Diego County, ranged 1-2 per day week ending November 22. Male and female annihilation treatments continued. Trapping at eradication level favorable. One fly trapped about halfway between epicenter and College Heights find of week ending November 15. These considered "fly outs" and not established infestations. Weather favorable for flies. Cool weather predicted and should aid in eradication program. Eradication efforts continued week ending November 29. Fly catches decreased to one specimen taken November 19. Male and female annihilation techniques and intensive trapping continued week ending December 6. No additional specimens taken during intensive trapping in Spring Valley area where single female fly previously taken. All trapping results negative since November 22 except for November 27 when 3 adults trapped in epicenter. (Cal. Coop. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - Surveys in Carlsbad area of Eddy County week ending November 22 showed infestations in 7 cotton fields as follows: 4 percent in one field, 12 percent in 2 fields, 32 percent in 2 fields, 48 percent in one field, and 92 percent in one field. These infestations indicate top crop damage. (N.M. Coop. Rpt.). CALIFORNIA - Adult catches decreased in San Joaquin Valley week ending December 6 due to inclement weather and early cotton harvest. Plowup and shredding continuing before rain halts operations. Adults captured in Kern, Fresno, Kings, Tulare, and Madison Counties. About 369 native moths trapped this season using gossyplure. All detection for larvae negative this season in San Joaquin Valley. Intensified sterile moth drop continued throughout season and ended November 16 with total of 37,110,850 sterile moths released in focal centers of native moth catches. (Cal. Coop. Rpt.).

RED IMPORTED FIRE ANT (Solenopsis invicta) - TEXAS - This species and S. geminata (fire ant) heavy in several south-central counties week ending November 22. Much S. geminata activity noted. Significant heavy infestations noted around roadways in Brazos County. (Cole, Green).

WHITEFRINGED BEETLES (Graphognathus spp.) - VIRGINIA - G. leucoloma fecundus adults collected in Sussex County October 9, 1974, and in Prince George County October 16, 1974, by E.B. Drewery and C. Darden. TENNESSEE - G. leucoloma striatus adult collected on sidewalk at Gorlinburg, Sevier County, July 15, 1974, by K. Elliot. TEXAS - G. peregrinus adults collected on shrubbery at residence in Corsicana, Navarro County, August 16, 1974, by R.L. Luckey. All determinations by R.E. Warner. These are all new county records. (PPQ).

New State Records - Several specimens of a CLICK BEETLE (Meristhus sp.) collected from blacklight traps at Kunia, Oahu, August 5, 1974, by J.W. Beardsley. Four specimens collected later in light traps at Honouliuli and Waipahu. Determined by T.J. Spilman. World distribution unknown. This is first record of genus in State. (Beardsley). Meristhus sp. is known from several locations in the continental U.S. (PPQ). Six specimens of a LEAFHOPPER (Balclutha rufofasciata Merino) found in blacklight trap catches at Honolulu International Airport, Oahu, December 4, 1974, by J.W. Beardsley. Species of Balclutha are known to be polyphagous grass feeders. Determined by J.W. Beardley. B. rufofasciatus occurs in Africa, Polynesia, Central America, the Philippines, and western Caroline Islands (Yap and Palau). (Mau). This is a new United States record, but B. rufofasciatus is not known to occur in the continental U.S. (PPQ).

General Vegetables - An adult of a SPHINGID MOTH (Theretra nessus) collected at Kokee, Kauai, November 7, 1974, by J. Wilson; 12 larvae collected on yam leaves (Dioscarea sp.) at Kaumakani by R. Mau and D. Melendez during week ending November 22. Pest established for new island record on Kauai. Numerous adults collected on Oahu past 30 days, but no larvae or breeding sources found. During week ending November 27, 30+ larvae collected from yam at Kaumakani, Kauai; appeared numerous. Survey negative on Oahu. (Ragasa et al.).

Fruits and Ornamentals - Reports week ending November 22 indicated BANANA SKIPPER (Erionota thrax) infests banana throughout Kauai, from Mana through Haena. Egg and larval parasites to be released on regular basis. Moderate infestation found in 18 acres of banana at Kaneohe, Oahu, week ending November 27. About 60 percent of trees infested, 20 percent of foliage damaged. Damage appears to be increasing in area, parasites released periodically. (Melendez, Mau). Two adults of OLEANDER HAWK MOTH (Deilephila nerii) taken in blacklight traps at Halawa and Hickam Air Force Base, Oahu, first week of December. First record of moths in light traps in about 3 months since species first found on Oahu. Light larval damage found on 7 crape jasmine trees (Ervatamia divaricata) at Salt Lake, Oahu, by J. Kajiwara. This is third host recorded in State; other 2 are oleander and Tahitian gardenia. (Kajiwara et al.).

Beneficial Insects - Sixteen adults of an ICHNEUMON WASP (Scenocharops sp.), a larval parasite of Erionota thrax (banana skipper) from Malaysia, released at Waiahole, Oahu, November 1, 1974. (Murai). Three-hundred adults of an ENCYRTID WASP (Ooencyrtus erionotae) released in vicinity of E. thrax egg clusters at Wailua Homestead, Kauai, November 15. Prior release at same location in July failed to become established. (Melendez, Mau). Control of Ophiomyia phaseoli (bean fly) by BRACONID WASPS (Opius spp.) in backyard bean plantings excellent on Maui and Kauai during November. Parasitism averaged 88 percent on Maui, 99 percent on Kauai. (Mau).

DETECTION

New United States Records - AN APHID (Jacksonia papillata) - UTAH - Cache County. (pp. 872-873). A LEAFHOPPER (Balclutha rufofasciata) - HAWAII - Oahu Island. (p. 875). A THRIPS (Frankliniella schultzei) - FLORIDA - Dade County. (p. 873).

New State Records - An APHID (Cinara junipivora) - VIRGINIA - Fairfax County. (p. 869). An APHID (Jacksonia papillata) - IDAHO - Franklin County, NORTH CAROLINA - Yancey and Mitchell Counties. (p. 872). A BARK BEETLE (Ips sulcifrons) - COLORADO - Custer County. (p. 871). A LADY BEETLE (Lindorus lophanthae) - ALABAMA - Morgan County. (p. 873). A MEALYBUG (Eurycoccus jessica) - INDIANA - Tippecanoe County. (p. 871). A MEALYBUG (Rhizoecus pritchardi) - OREGON - Jackson County. (p. 870). RED WAX SCALE (Ceroplastes rubens) - PENNSYLVANIA - York County. (p. 870). A TACHINA FLY (Compsilura concinnata) - MICHIGAN - Isabella County. (p. 874). A THRIPS (Frankliniella schultzei) - FLORIDA - Dade County. (p. 873). A WEEVIL (Apion occidentale) - NORTH DAKOTA - Ransom County. (p. 869).

New County Records - An APHID (Aphis rumicis) VIRGINIA - Arlington (p. 872). FACE FLY (Musca autumnalis) KENTUCKY - Anderson, Carroll, Jefferson, Owen, Spencer, Trimble (p. 872). MOSQUITOES - INDIANA - Psorophora ferox-Marshall, Aedes vexans - Bourbon (p. 872). SPIREA APHID (Aphis spiraecola) NEW JERSEY - Hunterdon (p. 869). WOOLLY WHITEFLY (Aleurothrixus floccosus) CALIFORNIA - Los Angeles (p. 869). WHITEFRINGED BEETLES (Graphognathus spp.) VIRGINIA - Sussex, Prince George. TENNESSEE - Sevier. TEXAS - Navarro. (p. 874).

NATIONAL WEATHER SERVICE 30-DAY OUTLOOK

MID-DECEMBER 1974 TO MID-JANUARY 1975

The National Weather Service's 30 day outlook for mid-December to mid-January is for temperatures to average below seasonal normal in the South as well as in California and much of the Great Basin. Above normal averages are indicated for the Northwest and along the northern border from the Great Lakes to northern New England. In unspecified areas near normal temperatures are in prospect. Precipitation is expected to exceed the median amount along the west and east coasts, and also over the middle Mississippi Valley and most of the southern half of the Nation except for the central Plateau Region.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

The U.S. Military Retrograde Cargo Inspection Program in the Republic of Viet-Nam: 1969-1973 [1]

Jay Abercrombie [2], Phillip Lawyer [3],
Richard W. Townsend [4], and Donald G. Weedmark [5]

Abstract: To preclude the introduction of pest species from the Republic of Viet-Nam to other countries, the U.S. Department of Defense, in cooperation with the U.S. Department of Agriculture and the U.S. Public Health Service, established a quarantine inspection program for all military cargo leaving that nation. During 40 months of operation, inspectors precleared about 1.5 million metric tons of air and maritime cargo.

Introduction: During war, quarantines and control programs aimed at potential foreign pests sometimes are neglected for expediency or simply overwhelmed by the volume of cargo and materiel. For example, during World War II, the oriental fruit fly (*Dacus dorsalis* Hendel) gained entrance to the Hawaiian Islands from the Marianas at a time when proper precautions could not be taken (Swain, 1952).

To preclude such a possibility from occurring during the Vietnamese War, the U.S. Department of Defense (DOD), in cooperation with the U.S. Department of Agriculture (USDA) and the U.S. Public Health Service (USPHS), established in 1969 a quarantine inspection program for all military retrograde cargo leaving the Republic of Viet-Nam. The program was designed to alleviate the inherent problems of inspecting vast quantities of cargo at ports of entry in the United States. In other words, it was set up as a preclearance program, with normal quarantine inspections continuing at destination ports in the United States.

From the beginning, personnel from USDA and USPHS served as advisors, and personnel from the Department of Defense served as inspectors or supervisors. During the 40 months of operation, 468 people served with the program: 434 inspectors from DOD, 23 advisors from USDA, and 11 advisors from USPHS.

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[1] Amended from a paper presented by the senior author at the 46th annual meeting of the Eastern Branch, Entomological Society of America, Hershey, Pennsylvania, September 26, 1974.

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[4] Formerly, Preventive Medicine NCO, MACV. Present address: MEDDAC, USMACTHAI SPT GP, ATTN: THMC-PM, APO San Francisco 96346.

[5] Formerly, USDA Advisor to MACV. Present address: APHIS, USDA, P.O. Box 43L, San Ysidro, California 92073.

Military quarantine inspectors were responsible for preclearing not only military planes and ships, but also commercial vessels and aircraft which were U.S. flag carriers bound for any destination. Inspection services were not provided at South Vietnamese commercial ports, nor were carriers of foreign registry inspected at military ports.

Air Cargo Inspections: The U.S. Air Force was responsible for inspecting departing aircraft and air cargo. Principle Air Force quarantine inspection stations were located in Bien Hoa, Cam Ranh, Da Nang, Phu Cat, and Saigon.

The air cargo inspections began in January 1970 and continued until February 27, 1973. This date marked the termination of the entire military quarantine inspection program due to the departure of all U.S. armed forces from the Republic of Viet-Nam in March 1973. During the 38 months of operation, 17,752 cargo planes and 148,529 metric tons of cargo were inspected. In July 1971, the Air Force expanded its inspection services to include passenger aircraft. From that time until February 27, 1973, 3,342 passenger craft were precleared.

All departing planes were treated with micronized DDT-carbaryl dust 6/. About 460 kg of this insecticide were used in treating the 21,094 precleared aircraft. In addition, dichlorovos pest strips were used in some aircraft and in some containerized cargo shipped by sea. About 234,000 pest strips were used at seaports and air terminals.

Maritime Cargo Inspections: Maritime cargo made up the great bulk of tonnage being exported from the Republic of Viet-Nam. The U.S. Army was responsible for inspecting departing ships and maritime cargo. The principle U.S. Army terminals were located in Cam Ranh, Da Nang, Qui Nhon, and Saigon. The first inspections were made by the Army in September 1969. The maritime inspection program became fully operational on November 1, 1969, and continued for 40 months until February 27, 1973.

Table 1 summarizes the inspections of vessels and cargo for each of the 5 years of operation. Beginning in 1971, the amount of metric tons inspected rose tremendously. This is a reflection of the heavy equipment which began to leave the Republic of Viet-Nam in that year. In 1972, over 0.5 million metric tons were precleared; this is about 40 percent of the total maritime cargo for the entire 40 months.

Table 1 also shows that the total percentage of departing ships inspected was 61 percent. This figure is slightly misleading, however, when one considers that during the last 3 years of the program (1971-1973), when the bulk of cargo was being moved, the percentage of ships precleared was consistently around 90 percent.

6/ EPA Registration No. 10384-2.

From the outset, one of the greatest challenges in maritime inspections was preventing infestations of departing goods and ships by rodents and their fleas which are the vectors of plague. The only country in the world with plague-infected ports is Viet-Nam (Velimirovic, 1973). Plague came to Viet-Nam in 1894 during the last great plague pandemic. This pandemic was precipitated by escaping shipboard rodents, and was the source of plague epidemics in many seaport cities in every continent except Antarctica. With plague foci still existing in areas near the Pacific Ocean in the Western United States, ships and cargoes were vigorously supervised in both the Republic of Viet-Nam and in the United States. In the Republic of Viet-Nam, vigorous attempts were made to establish sterile areas adjacent to ports and to provide paved staging areas for cargo. In addition, bait stations were maintained in ports for rodents in accordance with the International Health Regulations of the World Health Organization.

Rodenticides and insecticides were applied to cargo by U.S. Government contractors. About 26 percent of the pieces being shipped by sea required pesticide treatment. These goods received about 250,000 rodent bait blocks and about 4,260 kg of 2 percent diazinon dust for rodent and flea control.

Discussion: The 148,529 metric tons of air cargo added to the 1,284,252 metric tons of maritime cargo equal 1,432,781 metric tons inspected and precleared during the 40 months of operation. The estimated cost of the entire program, including salaries, pesticides, transportation, and per diem rates, was about $16.5 million. By far the greatest amount of this cost (almost $16 million) was for the salaries of the inspectors and advisors.

Many medical and agricultural pests were intercepted in the Republic of Viet-Nam and prevented from being exported. Nevertheless, a number of real or potential pests were intercepted by quarantine inspectors in the United States in cargo being shipped from the Republic of Viet-Nam.

Girard (1969, 1971, 1972a, 1972b, 1973, 1974) has listed yearly the number of real or potential agricultural pests intercepted by inspectors from USDA. In fiscal year 1968, 107 pests were intercepted from the Republic of Viet-Nam. In 1969, the number rose to 124. In 1970, the year that the military quarantine inspection program began to function, only 85 plant pests were detected by USDA. Beginning in fiscal year 1971, the amount of tonnage and ship departures increased tremendously (see Table 1). It was during this time that the number of intercepted pests rose to 107. However, in 1972, the last year for which data on interceptions are available, only 84 plant pests were detected by quarantine inspectors. Thus, in spite of great increases in number of pieces and tonnage of retrograde cargo, the number of exported pests decreased.

Literature Cited

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Table 1. Vessels and maritime cargo inspected by military quarantine inspectors in the Republic of Viet-Nam for each of the calendar years 1969-1973.

Year	Total No. Ships Departing	No. of Ships Inspected	Percent of Ships Inspected	No. of Pieces Inspected	Metric Tons Inspected
1969	402	35	9	8,834	34,043
1970	1,024	449	44	166,910	299,745
1971	671	608	91	169,007	422,487
1972	622	553	89	261,309	507,476
1973	51	48	94	7,034	20,501
Total	2,770	1,693	61	613,094	1,284,252

COOPERATIVE ECONOMIC INSECT REPORT

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS - 1973

Introduction

Prior to 1966, insect loss estimates were published in the Cooperative Economic Insect Report as individual reports. An attempt has been made for the ninth year to condense loss estimates from various States into a single report. This gives a more meaningful and better overall picture of the crop losses. The data has been compiled from the crop loss estimates submitted from 14 States. The entomologists submitting the 1973 estimates are listed below.

H. F. McQueen	Alabama
J. E. May	Arizona
W. P. Boyer	Arkansas
W. B. Tappan	Florida
K. O. Bell	Kansas
D. E. Barnett	Kentucky
H. Hoger	Minnesota
D. L. Keith	Nebraska
W. A. Iselin	New Mexico
W. J. Brandvik	North Dakota
D. C. Arnold	Oklahoma
P. A. Jones	South Dakota
L. R. Green	Texas
W. A. Allen	Virginia

Legend for pest abbreviations appears at end of loss tables.

Separates of this report are available from the Pest Survey and Technical Support Staff.

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
24(49-52):881-903, 1974

			Yield Loss				Control Cost			
Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
ALFALFA (Hay)			Tons							
Arkansas	AlW, FA, BA	60,000	0.6	24.00	18,000	432,000	4.00	42,000	168,000	600,000
Kansas	ACw, PWC	1,210,000	0.16	6.85	3,960	27,131	2.25	1,600	3,600	30,731
	AlW	"	0.26	11.41	223,410	2,550,091	2.50	208,850	522,125	3,072,216
	FA	"	0.16	6.85	11,970	82,009	2.50	4,030	10,075	92,084
	Gh	"	0.13	5.48	13,545	74,240	2.50	3,985	9,963	84,203
	PA	"	0.13	5.48	47,920	262,650	2.50	5,180	12,950	275,600
	SAA	"	0.16	6.85	17,470	119,691	3.00	14,080	42,240	161,931
	VC	"	0.16	6.85	105,075	719,895	2.50	60,925	152,313	872,208
Minnesota	L	-	-	-	1,000	-	-	52,740	53,740	-
	A	-	-		500	-	-	26,370	26,870	-
New Mexico	PA, SAA, AlW, AC	205,000	0.88	44.00	50,000	2,200,000	8.00	100,000	800,000	3,035,000
North Dakota	Gh, PA, AlW, PB	1,580,000	0.11	3.19	100,000	319,000	2.50	50,000	125,000	444,000
Oklahoma	AlW, PA, SAA, FA, GCw	526,000	0.86	39.16	123,084	4,819,969	7.98	350,316	2,795,522	7,615,491
South Dakota	Gh, PA, AlW, FB	2,530,000	0.44	13.49	569,250	7,679,182	2.75	63,250	173,937	7,853,119
Virginia	AlW, PA, Slb	75,000	1.11	61.05	11,530	703,907	7.50	45,920	344,400	1,278,907
				Subtotal		19,989,765			5,240,735	25,419,490
ALFALFA (Seed)			Lbs.							
Arizona	CSC, LB, StB	2,500	8.50	705.50	500	352,750	10.00	2,000	20,000	373,750
Nebraska	W, BB, Wbw, C, PB, L, Gh, Cws	17,000	7.20	5.04	1,870	9,425	3.50	1,530	5,355	14,780
				Subtotal		362,175			25,355	388,530

			Yield Loss				Control Cost			
Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
APPLES										
Arkansas	CdM, M, RAA, PC, LR	1,600	-	-	-	-	60.00	1,600	96,000	135,600
Minnesota	AM	-	-	-	-	-	-	372,000	372,000	372,000
Virginia	CdM, M, A, AM	Lbs. 400,000,000	-	-	-	-	Lbs. .0050	-	Lbs. 2,000,000	Lbs. 2,000,000
				Subtotal					468,000*	507,600*
BARLEY			Bu.							
Arizona	BA, FB, A	120,000	7.5	14.25	15,000	213,750	4.50	15,000	67,500	281,750
North Dakota	Gh, A, Ww, T	2,790,000	3.3	7.03	50,000	351,500	2.75	50,000	137,500	489,000
				Subtotal		565,250			205,500	770,750
BROCCOLI (Fall)			Cwt.							
Arizona	A, BA, CL	450	30	480.00	-	-	67.00	450	30,150	30,150
				Subtotal					30,150	30,150
BROCCOLI (Winter)										
Arizona	A, BA, CL	540	37.5	708.75	-	-	76.00	540	41,040	41,040
				Subtotal					41,040	41,040

* Less Virginia totals

Crop State	Pest Complex	Total Acres Produced	Yield Loss Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
BROILERS		Birds						Birds		
Alabama	Hf, DB, M, Li	399,300,000	-	-	-	-	.03	399,300,000	11,979,000	11,979,000
				Subtotal					11,979,000	11,979,000
CABBAGE (Fall)										
Arizona	A, BA, CL	240	101.5	390.78	-	-	85.00	240	20,400	20,400
				Subtotal					20,400	20,400
CABBAGE (Spring)										
Arizona	A, BA, CL	490	96	580.80	-	-	77.00	490	37,730	37,730
				Subtotal					37,730	37,730
CABBAGE (Winter)										
Arizona	A, CL, BA	290	155	768.80	-	-	72.00	290	20,880	20,880
				Subtotal					20,880	20,880
CANTALOUPES (Fall)										
Arizona	A, CL, L	600	4.5	43.20	-	-	6.25	600	3,750	3,750
				Subtotal					3,750	3,750
CANTALOUPES (Spring)										
Arizona	A, CL, L, M	6,900	26	296.40	-	-	6.25	6,900	43,125	43,125
				Subtotal					43,125	43,125

Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Yield Loss Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Control Cost Treated Acres	Total Loss (dollars)	Sub-total (dollars)
CANTALOUPES (Summer)										
Arizona	A, CL, L, M	1,800	12.5	127.50	-	-	6.25	1,800	11,250	11,250
				Subtotal					11,250	11,250
CARROTS (Spring) Arizona	A, BA, CaB	2,300	5.5	34.82	600	20,892	4.75	1,700	8,075	28,967
				Subtotal		20,892			8,075	28,967
CARROTS (Winter)										
Arizona	A, BA, CaB	1,500	11	71.50	700	50,050	4.75	800	3,800	53,850
				Subtotal		50,050			3,800	53,850
CATTLE (Beef)		Head	Head	Head	Head		Head	Head		
Alabama	HoF, Li, CCG, SF, Hf, TF, FF, Ti, Mo, Bf	1,958,000	84 lbs.	26.88	500,000	13,440,000	3.00	1,458,000	4,374,000	17,814,000
Arkansas	HoF, LST	2,028,000	22.00*	22.00*	1,078,000	23,716,000	.80	950,000	760,000	24,476,000
	Mo	"	"	"	450,000	9,900,000				9,900,000
	CaL	"	"	"			.10	1,000,000	100,000	100,000
North Dakota	HoF, CaG, CaL, SF, FF, Mo	2,635,000	27.5	12.28	500,000	6,140,000	.50	2,000,000	1,000,000	7,140,000
Oklahoma	HoF, CCG, CaL, Ti, HrF	2,220,000	65 lbs.	38.29	2,356,830	33,278,988	1.88	2,880,570	5,415,472	38,694,460
				Subtotal		86,474,988			11,649,472	98,124,460

* Value per head

Crop State	Pest Complex	Total Acres Produced	Yield Loss				Control Cost			
			Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
CATTLE (Dairy)										
Alabama	HoF, CCG, CaL, Ti, HrF	112,000	1,112 lbs.	93.63	14,000	1,310,820	2.75	180,000	495,000	1,805,820
Arkansas	Hf, HoF	96,000	Cwt. 4.44	35.48	39,000	1,383,720	4.00	57,000	228,000	1,611,720
Oklahoma	HoF, CaL, CCG, HrF, SF	130,000	11.4	83.68	23,360	1,979,869	3.20	94,640	302,848	2,282,717
					Subtotal	4,674,409			1,025,848	5,700,257
CAULIFLOWER (Fall)										
Arizona	A, BA, CL	100	30	651.00	-	-	65.00	100	6,500	6,500
					Subtotal				6,500	6,500
CAULIFLOWER (Winter)										
Arizona	A, BA, CL	850	45	976.50	-	-	75.00	850	63,750	63,750
					Subtotal				63,750	63,750
CORN (Grain)										
Alabama	SWCB, CLA, CEW, FA, ECB, MB, SGSB	610,000	Bu. 4.6	11.73	580,000	7,151,400	1.80	30,000	54,000	7,205,400
Arizona	CEW, LCB, SWCB, WCR, SCM	9,000	6.4	17.92	5,000	89,600	8.00	4,000	32,000	121,600

Crop State	Pest Complex	Total Acres Produced	Yield Loss Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
CORN (Grain) Cont.										
Kansas	CB	1,540,000	5	12.00	7,540	90,480	3.00	2,460	7,380	97,860
	CEW, FA (whorls)	"	4	9.60	151,250	1,452,000	2.50	33,150	82,875	1,534,875
	CEW, FA (ears)	"	-				2.70	24,000	64,800	64,800
	CLA	"					2.80	25,300	70,840	70,840
	CR (adults)	"	4	9.60	37,150	356,640	2.80	123,000	344,400	701,040
	CR (larvae)	"	16	38.40	65,000	3,604,800[1]	3.00	924,000	2,772,000	6,376,800
	Cws	"	5	12.00	9,000	108,000	2.00	18,450	36,900	144,900
	ECB	"	-	-	-	-	2.20	32,600	71,720	71,720
	SpM	"	-	-	-	-	3.50	300,000	1,050,000	1,050,000
	T	"	-		-	-	2.00	12,600	25,200	25,200
	WBC	"					3.40	3,700	12,580	12,580
	YsAw	"	3	7.20	5,300	38,160	2.00	5,000	10,000	48,160
Kentucky	ECB	968,000	1.14	2.79	86,152	240,364	5.50	59,048	324,764	565,128
Minnesota	CR	-	-		12,511,500	-		6,412,500	18,924,000	18,924,000
	ECB	-	-	-	10,384,958	-	-	50,362	10,435,320	10,435,320
	Cws	-	-	-	263,400	-	-	135,000	398,400	398,400
	Ww	-	-	-	395,100	-	-	202,500	597,600	709,924
Nebraska	CR, ECB, CEW, SCM, Cws, Gh, Ww, M, CLA, SB, Aws, FA, WBC, Grb	5,850,000	14	31.39	3,902,750[2]	30,691,572[2]	4.00	5,123,520	20,494,080	51,185,652

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[1] Formula not applicable, loss of one bushel per acre on 462,000 acres added due to poor control

[2] Formula not applicable, combination of untreated acres needing treatment and acres receiving treatment that yielded inadequate insect protection

Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Yield Loss			Control Cost			Total Loss (dollars)
				Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	
CORN (Grain) Cont.										
North Dakota	CR, Ww, Gh, CLA	180,000	3.4	7.65	31,000	237,150	2.30	30,000	69,000	306,150
South Dakota	CR, Ww, Gh, Cws	2,630,000	14.0	29.03	473,400	13,742,802	6.00	1,104,600	6,627,600	20,370,402
Virginia	Aws, Cws, JB	550,000	63	148.05	3,250	407,138	5.00	85,250	426,250	833,388
				Subtotal		58,210,106			62,931,709	121,254,139
CORN (Silage)			Ton(s)							
North Dakota	ECB, CR, Ww, Gh, CLA	305,000	.31	4.03	65,000	261,950	2.50	15,000	37,500	422,300
Virginia	Aws, Cws, JB, CEW	176,000	11.3	202.50	880	178,200	5.00	27,280	136,400	314,600
				Subtotal		440,150			173,900	736,900
CORN (Sweet)										
Alabama	SGSB, BSB, FA, Ww, CR, CLA	4,500					32.00	4,500	144,000	144,000
Minnesota	CR ECB CEW	12,511,500 10,384,958						81,000 688,500 81,000	81,000 688,500 81,000	81,000 688,500 81,000
				Subtotal					850,500	850,500
COTTON			Lbs.							
Alabama	BW, Blw, TB, T, TPB, CA, SpM, BwWf	525,000	85	35.70	30,000	1,071,000	16.00	480,000	7,680,000	8,841,000
Arkansas	BW, Blw, M, A, P	1,000,000	24.8	11.43	50,000	571,500	8.00	750,000	6,000,000	6,766,500
Oklahoma	BW, Blw, F, T	526,000	86	45.58	123,926	5,648,547	10.55	202,194	2,133,147	7,781,694
Texas	A, SpM, T, F, Blw, BW, Cws, BA, Gh	5,200,000	172.4	81.20	2,600,000[3]	71,711,780	8.75	6,011,809[4]	15,022,438	87,617,368
				Subtotal		79,022,827			30,835,585	111,006,562

3/ Estimate
4/ Estimated accumulated acres treated

			Yield Loss				Control Cost			
Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
COTTON (Seed)			Ton							
Alabama	BW, Blw, TB, T, TPB, CA, SpM, BwWf	510,000	.07	6.77	30,000	203,100	*	480,000	*	203,000
				Subtotal						203,000
COTTON (Pima)			Lbs.							
Arizona	Blw, LB, PBw	34,000	91.05	121.10	14,000	1,695,400	26.00	20,000	520,000	2,215,400
New Mexico	Blw, PBw, LB	17,700	22.56	2,481.60		3,841	12.00	3,500	42,000	46,181
				Subtotal		1,699,241			562,000	2,261,581
COTTON (Upland)										
Arizona	LB, BA, Blw, PB, StB, CLB	275,000	266.25	106.50	45,000	4,792,500	30.00	180,000	5,400,000	10,192,500
New Mexico	PBw, Blw, LB	127,000	61.2	33.05	-	-	11.00	7,600	91,200	91,200
				Subtotal					5,491,200	10,283,700
FIELD BEANS										
Nebraska	WBC, MBB, Gh, BLB, L, A	104,000	1.28	25.60	5,000	128,000	3.50	75,000	262,500	390,500
				Subtotal		128,000			262,500	390,500
FLAX										
North Dakota	Gh, Cr	933,000	0.8	6.40	20,000	128,000	2.75	20,000	55,000	183,000
South Dakota	Cws	540,000	6.8	51.00	4,860	247,860	7.00**	540	3,780	251,640
				Subtotal		375,860			58,780	434,640

* Charged to lint
** Replanted

Crop State	Pest Complex	Total Acres Produced	Yield Loss				Control Cost			
			Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
FOREST										
Alabama	ETC, BTB, SPB, AB, SPS	21,700,000				5,400,000				85,400,000
					Subtotal	5,400,000				5,400,000
GRAPEFRUIT (Red Blush)			Boxes							
Arizona	T, SpM	2,631	150	165.00	-	-	20.00	2,631	52,620	52,620
					Subtotal				52,620	52,620
GRAPEFRUIT (White)										
Arizona	T	5,582	150	90.00	582	52,380	20.00	5,000	100,000	152,380
					Subtotal	52,380			100,000	152,380
GRAPES										
Arkansas	GPM, GS	2,800					34.00	2,800	95,200	95,200
					Subtotal				95,200	95,200
HAY										
Arizona	AC, BA, Cws, LB, EGW	260,000	0.58	24.24	40,000	969,600	3.00	20,000	60,000	1,029,600
Minnesota	Gh				184,590			3,500	188,090	188,090
Nebraska	Gh, GW, Cws, SAA, PB, PA CoA, L, AC, Wbw, CR, Aws, Grb	4,200,000	0.14	4.41	366,000	1,614,060	3.50	96,000	336,000	1,950,060
					Subtotal	2,583,660			584,090	3,167,750

Crop State	Pest Complex	Total Acres Produced	Yield Loss				Control Cost			Total Loss (dollars)
			Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	
HENS AND PULLETS		Birds					Birds	Birds		
Alabama	Hf, DB, M, L	12,743,000		-		-	0.12	20,200,000	2,424,000	2,424,000
Arkansas	NFM	16,000,000		-			0.01	6,000,000	60,000	60,000
	Hf	16,000,000	-			-	0.005	13,000,000	65,000	65,000
				Subtotal					2,549,000	2,549,000
HOGS		Head	Lbs							
Alabama	Hf, HL, M	1,288,000	18.8	6.97	648,000	4,516,000	1.35	1,600,000	2,160,000	6,676,000
Arkansas	Li	349,000	-	2.19	140,000	306,600	0.10	35,000	3,500	310,100
				Subtotal		4,822,600			2,163,500	6,986,100
HONEYDEWS (Summer)			Cwt.							
Arizona	A, CL, L, M	1,200	18.5	182.41	-	-	5.00	1,200	6,000	6,000
				Subtotal					6,000	6,000
HONEYDEWS (Fall)										
Arizona	A, CL, L	200	9	95.4	-	-	6.00	200	1,200	1,200
				Subtotal					1,200	1,200
LEMONS			Boxes							
Arizona	T, SpM	14,464	165	473.55	-	-	32.00	14,464	462,848	462,848
				Subtotal					462,848	462,848
LETTUCE (Spring) - Yuma			Cwt.							
Arizona	A, BA, CL, LB, T	2,900	115.5	1,224.30	-	-	65.00	2,900	188,500	188,500
				Subtotal					188,500	188,500

Crop State	Pest Complex	Total Acres Produced	Yield Loss Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
LETTUCE (Spring) - Other										
Arizona	A, BA, CL, LB, T	9,500	82.50	1,006.50			65.00	9,500	617,500	617,500
				Subtotal					617,500	617,500
LETTUCE (Fall) - Yuma										
Arizona	BA, CL, CEW, A, LB, T, Cr	8,500	104.5	397.10			78.00	8,500	663,000	663,000
				Subtotal					663,000	663,000
LETTUCE (Fall) - Other										
Arizona	BA, CL, CEW, Cws, A, LB, T	9,900	96.25	385.00	-		78.00	9,900	772,200	772,200
				Subtotal					772,200	772,200
LETTUCE (Winter) - Yuma										
Arizona	BA, CL, A, T, LB	9,400	123.75	909.56		-	78.00	9,400	733,200	733,200
				Subtotal					733,200	733,200
LETTUCE (Winter) - Other										
Arizona	BA, CL, A, T, LB	1,600	79.75	710.57	-	-	78.00	1,600	124,800	124,800
				Subtotal					124,800	124,800
OATS										
Nebraska	Ww, EGA, WG, CB, L, Aws, Cws, Gh	460,000	1.92	2.02	7,000	14,140	3.00	3,000	9,000	23,140
North Dakota	Gh, Ww	1,800,000	3.7	3.96	20,000	79,200	2.50	20,000	50,000	129,200
				Subtotal		93,340			59,000	152,340
ONIONS (Dry) - Spring			Cwt.							
Arizona	BA, CL, OT	1,600	96	848.64	600	509,184	5.00	1,000	5,000	514,184
				Subtotal		509,184			5,000	514,184

				Yield Loss				Control Cost		
Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
ORANGES (Navels)			Boxes							
Arizona	T, SpM	4,653	30	63.30			20.00	4,653	93,060	93,060
				Subtotal					93,060	93,060
ORANGES (Sweets)										
Arizona	T, SpM	1,669	120	236.40	-	-	20.00	1,669	33,380	33,380
				Subtotal					33,380	33,380
ORANGES (Valencias)										
Arizona	T, SpM	17,759	60	133.20	759	101,098.80	20.00	17,000	340,000	441,099
				Subtotal		101,098.80			340,000	441,099
ORNAMENTALS AND TURF										
Alabama	TS, SJS, SpM, Wf, PTB, LPTB, CB, A, Sc, SW	1,200,000	-	-	-	-	3.00	1,200,000	-	3,600,000
				Subtotal						3,600,000
PASTURES										
Arkansas	FA	2,613,000*	-	**	75,000	**	3.00	175,000	525,000	-
				Subtotal					525,000	
PEANUTS			Lbs.							
Alabama	LCB, T, SCR, GC, W, WfB, SpM, L, RPw	200,000	600	96.60	30,000	2,898,000	6.00	160,000	960,000	3,858,000
Oklahoma	LCB, RPw, CEW, T, SpM	118,000	194	31.04	22,267	691,168	5.37	37,913	203,593	894,761
Virginia	SCR, PL, T	102,000	295	48.08	2,000	96,160	12.50	100,000	1,250,000	1,366,160
				Subtotal		3,685,328			2,413,593	6,118,921

* 1969 Census
** No evaluation of untreated acreage loss made

			Yield Loss				Control Cost			
Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
PEACHES		Lbs.					Tree	Trees		
Alabama	PTB, CPTB, SJS, Sc, SpM, OFM	17,000,000					0.32	650,000	208,000	208,000
Arkansas	OFM, TPB, SB, PC, Sc, PTB	Acres 5,500					Acre 38.00	Acres 3,500	133,000	343,000
				Subtotal					341,000	551,000
PEAS										
Minnesota	A							100,800	100,800	100,800
				Subtotal					100,800	100,800
PECANS		Trees	Trees	Trees		Trees	Trees			
Alabama	HS, A, PeW, PNC, StB, PLC	925,000	12.0	4.74	600,000	2,844,000	9.00	150,000	1,350,000	4,044,000
			Lbs.	Acre		Acre	Acre			
Oklahoma	PeW, PNC, HS, FW	28,000,000	224	68.77	38,488	2,646,820	12.88	15,720	202,474	2,849,294
				Subtotal		*			1,552,474	6,893,294
POPCORN		Acres								
Nebraska	CR, ECB, CEW, SCB, Cws, M, Ww, CLA, Aws, FA, WBC, Grb	24,500	408	14.28	2,150	30,702	3.50	15,000	52,500	83,202
				Subtotal		30,702			52,500	83,202
POTATOES										
Alabama	Ww, A, PFB, PoL, CPB, WfB	19,000	–				7.00	19,000	133,000	133,000
Arizona	PP, GPA	8,000	Cwt. 210	1,060.50			5.00	8,000	40,000	40,000

* Cannot be added because of different Units

				Yield Loss				Control Cost		
Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Total Loss (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Sub-total (dollars)
POTATOES (Cont.)										
Minnesota	Cws				10,621			222,500	233,121	233,121
	Ww	-		-	3,824	-		80,100	83,924	83,924
	L		-		14,689			311,500	326,189	326,189
	A	-	-		4,284		-	89,000	93,284	93,284
	FB	-		-	4,284			89,000	93,284	93,284
	CPB	-	-	-	3,824	-	-	80,100	83,924	83,924
Nebraska	CPB, L, PB, BB, PP, FB	6,800	15.92 Cwt.	55.56	500	27,780	3.50	2,000	7,000	31,780
North Dakota	FB, L, CPB, Ww, CL	132,000	4.4	14.30	10,000	143,000	9.30	60,000	558,800	701,800
				Subtotal		170,780			1,652,526	1,823,306
RANGE										
South Dakota	Gh	26,000,000	0.21	6.30	23,400	147,420	2.75	2,600	7,150	154,570
				Subtotal		147,420			7,150	154,570
RICE (Foliage treatment)										
Arkansas	Gh, RSB	533,000	-	-			2.50	10,000	25,000	25,000
				Subtotal					25,000	25,000
RICE (Seed treatment)										
Arkansas	RWW	533,000	-		*		0.35	400,000	140,000	140,000
				Subtotal					140,000	140,000
RYE			Bu.							
North Dakota	Gh	107,000	2.4	4.56	6,000	27,360	2.50	1,000	2,500	29,860
				Subtotal		27,360			2,500	29,860
SAFFLOWER										
Arizona	LB	23,000	97.5	7.41	15,000	111,150	3.50	8,000	28,000	139,150
				Subtotal		111,150			28,000	139,150

* RWW resistant to aldrin seed treatment

Crop State	Pest Complex	Total Acres Produced	Yield Loss Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
SMALL GRAIN										
Minnesota	Cws	-	-	-	-	-	-	8,800	8,000	8,800
	Ww	-	-	-	-	-	-	8,800	8,800	8,800
	A	-	-	-	-	-	-	88,000	88,000	88,000
	Gh	-	-	-	-	-	-	88,000	88,000	88,000
	Aws	-	-	-	-	-	-	33,000	33,000	33,000
					Subtotal				226,600	226,600
SNAP BEANS										
Alabama	MBB, BLB, CEW, Spm, LCB, T, CR	1,450	-	-	-	-	16.00	1,450	23,200	23,200
					Subtotal				23,200	23,200
SORGHUM (Grain)			Bu.							
Arizona	A, BA, CEW, FB, LCB, SwCB, STB	140,000	7.20	20.59	20,000	411,800	5.00	80,000	400,000	811,800
Arkansas	SM, SWw, FA	149,000	14.00	27.54	1,300	35,802	2.50	18,700	46,750	82,552
Kansas	CB	3,900,000	2.24	4.70	15,210	71,548	2.50	6,290	15,725	87,273
	CEW (heads)	"	2.24	4.70	7,000	32,928	2.50	5,500	13,750	46,678
	CEW, FA (whorls)	"	2.24	4.70	174,400	820,378	2.50	30,050	75,125	895,503
	CLA	"	-	-	-	-	2.50	70,800	177,000	177,000
	Cws	"	2.24	4.70	9,000	42,336	2.50	18,450	46,125	88,461
	Gh	"	2.24	-	-	-	2.00	10,650	21,300	21,300
	Gb	"	8.40	17.64	280,000	4,939,200	2.75	940,400	2,586,100	7,525,300
	SpM	"	-	-	-	-	3.00	28,500	85,500	85,500
	SWw	-	2.80	5.88	8,900	52,322	2.50	5,500	13,750	66,082
	T	-	-	-	-	-	2.50	10,200	25,500	25,500
	YsAw	-	1.68	3.53	15,460	54,543	2.50	5,040	12,600	67,143
New Mexico	Gb, StB, FcB	363,000	10.80	26.89	25,000	67,225	2.50	130,000	32,500	139,725
Nebraska	CLA, Cws, Gh, Ww, PB, RA, CB, SCM, ScB, Gb	2,060,000	4.08	8.32	613,710	1,713,920 5/	4.00	875,500	3,502,000	5,215,920

5/ Formula not applicable, combination of untreated acres needing treatment and acres receiving treatment that yielded inadequate insect protection.

Crop State	Pest Complex	Total Acres Produced	Yield Loss Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
SORGHUM (Cont.)										
Oklahoma	Gb, CEW, SM, FA, CLA	696,000	7.40	34.13	143,306	4,891,034	3.50	58,534	204,869	5,095,903
South Dakota	Gb, Ww, CLA	262,000	8.60	17.37	55,020	955,697	2.75	23,580	64,845	1,020,542
Texas	Gb, CEW, SM, SWw, CB, ScR	6,950,000	30.00	63.00	1,256,240	22,536,990	4.70	2,769,770	13,017,919	35,554,909
					Subtotal	36,625,723			20,341,358	57,007,091
SOYBEANS			Bu.							
Alabama	TB, VbC, CL, SGSB, BSB, BLB, CEW, LCB, MBB, SL, GCw, WfB	920,000	2.10	11.55	75,000	866,250	5.00	325,000	1,625,000	2,491,250
Arkansas	CEW, FA, GW	4,650,000	-	-	-	-	2.50	25,000	62,500	62,500
Kansas	CEW	1,200,000	1.80	9.94	23,100	229,706	2.50	2,000	5,000	234,706
	Cws	"	0.70	3.73	10,700	39,900	2.50	3,100	7,750	47,650
	GCw	"	0.70	3.73	46,600	173,771	2.50	3,000	7,500	181,271
	YsAw	"	0.70	3.73	4,750	17,713	2.50	250	625	18,338
Kentucky	GCw	924,000	1.30	7.17	36,960	265,003	2.75	9,240	25,410	290,413
Minnesota	Gh	-	-	-	10,000	-	-	-	10,000	10,000
	PL	-	-	-	-	-	-	102,500	102,500	102,500
Nebraska	BLB, Grb, MBB, Wbw, GCw, Gh, CR, Cws, PL	1,210,000	4.50	24.52	48,400	1,186,768	3.50	72,600	254,100	1,440,868
North Dakota	Gh, PL	233,000	1.20	6.60	50,000	330,000	2.50	30,000	75,000	405,000
South Dakota	Gh	411,000	7.20	39.96	-	-	2.75	12,330	33,908	33,908
Virginia	MBD, CEW, StB	413,000	5.40	29.70	2,650	78,705	4.40	189,980	835,912	927,867
					Subtotal	3,187,816			3,045,205	6,246,271

Crop State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Yield Loss Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
STRUCTURES		Homes								
Alabama	Cor, Mo, SGB, SqGB, Hf, CiB	1,050,000	-	-	-	-	5.00	1,050,000	5,250,000	5,250,000
				Subtotal					5,250,000	5,250,000
SUGAR BEETS			tons							
Arizona	A, BA	13,000	1.13	16.95	8,000	135,000	4.50	5,000	22,500	158,100
Minnesota	Cws	-	-	-	-	-	-	112,000	112,000	112,000
	Ww	-	-	-	-	-	-	19,600	19,600	19,600
	RM	-	-	-	-	-	-	84,000	84,000	84,000
	Wbw	-	-	-	-	-	-	8,400	8,400	8,400
Nebraska	Wbw, L, Gh, Ww, FB, SpM	74,500	1.19	40.60	500	20,300	4.00	8,500	34,000	54,300
North Dakota	SBRM, Cws, Wbw, Gh	79,400	0.94	18.80	3,000	56,400	6.75	52,000	351,000	407,400
				Subtotal		212,300			639,900	852,200
SUNFLOWERS			lbs							
Minnesota	PL	-	-	-	32,937	-	-	-	32,937	32,937
	SfB	-	-	-	-	-	-	98,813	98,813	98,813
North Dakota	PL, Gh, Cws, Ww	411,000	49.80	3.79	3,000	11,370	2.50	120,000	300,000	311,370
South Dakota	SHM, PL	79,000	475	35.63	3,752	133,684	3.50	198	693	134,377
				Subtotal		145,054			432,443	577,497
SWEET POTATOES										
Alabama	Ww, FB, SpW, WG, WfB, GCW, YsAw	4,500	-	-	-	-	8.50	-	38,250	38,250
				Subtotal					38,250	38,250

Crop				Yield Loss				Control Cost		
State	Pest Complex	Total Acres Produced	Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
TANGERINES (Algerian)			boxes							
Arizona	CT	521	35	46.20	-	-	20.00	521	10,420	10,420
				Subtotal					10,420	10,420
TANGERINES (Dancy)										
Arizona	CT	160	35	10.50	-	-	20.00	160	3,200	3,200
				Subtotal					3,200	3,200
TANGERINES (Minneola)										
Arizona	CT	1,970	35	112.35	-	-	20.00	1,970	39,400	39,400
				Subtotal					39,400	39,400
TANGERINES (Orlando)										
Arizona	CT	1,309	35	42.70	-	-	20.00	1,309	26,180	26,180
				Subtotal					26,180	26,180
TOBACCO (Shade grown type 62)			acres							
Florida	TB, Cws, TFB, CL, Ww, GPA	2,100	36	103.00	-	216,300	50.00	2,100	105,000	537,600
				Subtotal		216,300			105,000	537,600
TOBACCO (Flue-cured type 14)										
Florida	TB, TbH, Cws, GPA, CL, Ww	11,500	187	166.00	-	1,909,000	19.00	11,500*	218,500	2,242,500
Kentucky	FB, TbH, TB, A	170,000	36.80	33.48	15,600	522,288	10.00	46,900	969,000	1,491,288
				Subtotal		2,431,288			1,187,500	3,733,788

* All acreage treated regardless of need

Crop State	Pest Complex	Total Acres Produced	Yield Loss Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Control Cost Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
TOMATOES										
Alabama	TFw, FB, A, CL, CMF, SpM, TPw, WfB	10,000	-	-	-	-	50.00	10,000	500,000	500,000
Arkansas	TFw	3,200	-	-	-	-	25.00	2,600	65,000	65,000
				Subtotal					565,000	565,000
TURKEY										
Alabama	Hf, DB, M, Li	29,000	-	-	-	-	0.05	29,000	14,500	14,500
				Subtotal					14,500	14,500
WATERMELONS (Summer)			cwt							
Arizona	A, CL, L	4,300	6.75	23.15	300	6,945	4.50	400	1,800	8,745
				Subtotal					1,800	8,745
WHEAT			bu.							
Arizona	Gb	216,000	3.50	9.10	36,000	327,600	2.50	20,000	50,000	377,600
Kansas	ACw, PWC,	10,400,000	4.40	15.98	2,144	34,270	2.20	14,356	31,583	65,853
	Gb	"	1.90	6.66	23,120	153,979	2.00	3,480	6,969	160,939
	HF	"	-	-	15,487,704*	-	-	-	-	15,487,704
Nebraska	BWM, WG, WSM, Gws, HF, Gb, Gh, Ww, EGA, CB, WCB, Aws	2,680,000	5.30	18.35	188,571	3,460,278	3.50	12,429	43,501	3,503,779
New Mexico	Gb, Gh, FCB	289,000	0.60	1.95	60,000	117,000	2.75	140,000	385,000	520,000
North Dakota	Ww, Gh, WSM, Aws	8,913,000	1.70	8.26	600,000	4,956,000	2.50	250,000	625,000	5,581,000
Oklahoma	Gb, Aws, FA, BWM	5,260,000	5.10	17.85	1,110,912	19,892,779	2.63	624,888	1,643,455	21,536,234

* Formula not applicable, yield loss based on statewide loss survey

Crop State	Pest Comples	Total Acres Produced	Yield Loss					Control Cost		
			Loss Per Acre (Units)	Loss Per Acre (dollars)	Non-treated Acres	Sub-total (dollars)	Cost Per Acre (dollars)	Treated Acres	Sub-total (dollars)	Total Loss (dollars)
WHEAT (con't)										
Texas	Gb, WGM, FA	3,400,000	7.30	22.48	67,000	1,506,160	2.35	833,000	1,957,550	3,463.710
				Subtotal		30,448,066			4,743,058	50,695,819
WHEAT (HRS)										
North Dakota	WSSF	6,220,000	0.84	3.36	1,500,000	5,040,000	-	100,000	-	5,040,000
				Subtotal		5,040,000				5,040,000
WHEAT (Spring)										
South Dakota	WSM, HF	1,490,000	1.38	5.31	89,400	474,714	-	-	-	474,714
				Subtotal		474,714				474,714
WHEAT (Winter)										
South Dakota	Gb	666,000	19.30	72.30	232,800	16,831,440	2.75	300,000	825,000	17,656,400
				Subtotal		16,831,440			825,000	17,656,400

LEGEND

A - Aphids
AB - Ambrosia Beetle
AC - Alfalfa Caterpillar
ACw - Army Cutworm
AlW - Alfalfa Weevil
AM - Apple Maggot
Aws - Armyworm
BA - Beet Armyworm
BB - Blister Beetle
BF - Bean Fly
BLB - Bean Leaf Beetle
Blw - Bollworm
BSB - Brown Stink Bug
BTB - Black Turpentine Beetle
BW - Boll Weevil
BWM - Brown Wheat Mite
BwWf - Bandedwing Whitefly
C - Chalcids
Ca - Cotton Aphid
CaG - Cattle Grub
CaL - Cattle Lice
CB - Chinch Bug
CiB - Cigarette Beetle
CCG - Common Cattle Grub
CdM - Codling Moth
CEW - Corn Earworm
CT - Citrus Thrips
CL - Cabbage Looper
CaB - Carrot Bettle
CLA - Corn Leaf Aphid
CLB - Cotton Leafperforator
CoA - Clover Aphid
CSC - Clover Seed Chalcid
Cor - Cockroaches
CPB - Colorado Potato Beetle
Cr - Crickets
CR - Corn Rootworms
Cws - Cutworms
DB - Darkling Beetles
ECB - European Corn Borer
EGA - English Grain Aphid
EGW - Egyptian Alfalfa Weevil
ETC - Eastern Tent Caterpillar
F - Fleahoppers
FCB - False Chinch Bug
FA - Fall Armyworm
FW - Fall Webworm
FB - Flea Beetles
FF - Face Fly
GCw - Granulate Cutworm
GPM - Grape Berry Moth
Gb - Greenbug
Gs - Grape Scale
Gh - Grasshoppers
GPA - Green Peach Aphid
Grb - Grubs
GW - Garden Webworm
HF - Hessian Fly
Hf - House Fly
HL - Hog Louse
HoF - Horn Fly
HrF - Horse Fly
HS - Hickory Shuckworm
JB - Japanese Beetle
L - Leafhoppers
LCB - Lesser Cornstalk Borer
Li - Lice
LMF - Leafminer Flies
LPTB - Lesser Peachtree Borer
LR - Leafrollers
LST - Lone Star Tick
LB - Lygus Bugs
M - Mites
MB - Maize Billbug
MBB - Mexican Bean Beetle
Mo - Mosquitoes
NFM - Northern Fowl Mite
OT - Onion Thrips
OFM - Oriental Fruit Moth
P - Phylloxeras
PL - Painted Lady
PA - Pea Aphid
PB - Plant Bugs
PBw - Pink Bollworm
PC - Plum Curculio
PeW - Pecan Weevil
PFB - Potato Flea Beetle
PoL - Potato Leafhopper
PLC - Pecan Leaf Casebearer
PNC - Pecan Nut Casebearer
PP - Potato Psyllid
PTB - Peach Tree Borer
PWC - Pale Western Cutworm
RAA - Rosy Apple Aphid
RPw - Rednecked Peanutworm
RWW - Rice Water Weevil
RSB - Rice Stink Bug
SAA - Spotted Alfalfa Aphid
Sc - Scales
ScB - Seedcorn Beetle
SCM - Seedcorn Maggot
SCR - Southern Corn Rootworm
SGB - Sawtoothed Grain Beetle
SF - Stable Fly
SfB - Sunflower Beetle
SGSB - Southern Green Stink Bug
SJS - San Jose Scale
SW - Sod Webworm
SL - Soybean Looper
Slb - Spittlebugs
SqGB - Squarenecked Grain Beetle
SPB - Southern Pine Beetle
SpM - Spider Mites
SPS - Southern Pine Sawyer
SpW - Sweetpotato Weevil
StB - Stink Bugs
SBRM - Sugar Beet Root Maggot
SHM - Sunflower Head Moth
SwCB - Southwestern Corn Borer
SWw - Sorghum Webworm
TS - Tea Scale
T - Thrips
TB - Tobacco Budworm

LEGEND
(Con't)

TbH - Tobacco Hornworm
TF - Tabanid Flies
TFB - Tobacco Flea Beetle
TFw - Tomato Fruitworm
Ti - Ticks
TPB - Tarnished Plant Bug
TPw - Tomato Pinworm
TSM - Tumid Spider Mite
Vbc - Velvetbean Caterpillar
VC - Variegated Cutworm
W - Weevils
WBC - Western Bean Cutworm
Wbw - Webworms
WCR - Western Corn Rootworm
Wf - Whiteflies
WfB - Whitefringed Beetles
WG - White Grubs
WSM - Wheat Stem Maggot
WSSF - Wheat Stem Sawfly
Ww - Wireworms
YsAw - Yellowstriped Armyworm

Weather of the week continued from page 866.

Friday, another Low pressure center triggered snow over the extreme northern Mississippi Valley and western Great Lakes region. Elsewhere, rain and drizzle extended from the southern Great Lakes to the northern and central appalachians. A cold front brought clouds and rain to the Pacific Northwest and northern California Saturday. Around 1 inch of rain fell during the morning at Eureka, California, and Brookings, Oregon, while 1 inch of snow covered Boise, Idaho, and Winnemucca, Nevada. Nearly 11 inches of snow blanketed parts of Nebraska and northern Kansas on Sunday. Elsewhere, rain and drizzle fell along a cold front trailing from a Low in eastern Iowa into the central gulf coast. During the morning, 1.5 inches of rain soaked Columbus, Georgia, and over 1 inch fell at Macon, Georgia, and Pensacola, Florida.

TEMPERATUE: Cold air hovered over the South for the second consecutive week keeping temperatures slightly below normal all week. Sections of Arizona and New Mexico averaged 6 to 9 degrees below normal during the week. In contract, most of the Nation's northern half experienced above normal temperatures. Monday, the thermometer reached 70 degrees in extreme southern Florida and along the extreme southern California coast, while it remained below freezing from the Great Lakes to the Ohio Valley eastward into the Appalachians and in portions of the Rocky Mountain region. Predawn readings Tuesday were unusually warm over the northern and central Plains and northern New England for early December. Readings in the teens were restricted to the upper Great Lakes and the Ohio Valley into the Appalachians, with some colder readings in the Rockies. In contrast, it was quite chilly along the gulf coast with temperatures in the 30's and 40's. Wednesday, midday temperatures lingered in the 30's and 40's. It warmed into the 50's and 60's in the Gulf Coast States including southeast Texas. Along the Pacific coast. Most temperatures remained in the 40's and 50's. Afternoon temperatures were near normal on Thursday, most places ranging from the 20's in the northern portions of North Dakota and Minnesota to the 80's in southern Florida. Friday, midday temperatures climbed into the 30's and 40's over much of the country. Afternoon temperature extreme for the Nation ranged from 10 degrees at Minot, North Dakota, to 81 degrees at West Palm Beach, Florida. Minimum temperatues Saturday morning ranged from 1 degree at Alamosa, Colorado, and Ely, Nevada, to 69 degrees at Key West, Florida. Afternoon temperatures ranged from the upper teens in northern Maine to the 80's in extreme southern parts of Texas and Florida. Sunday, most midday temperatures lingered in the 20's and 30's across the Nation. The Southeast and the Gulf Coast States and Pacific Coast States remained in the 40's and 50's.

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